



WACO Great Lakes 2T-1A-2

SERVICE BULLETIN

NUMBER: GL-SB0002

Issued: 6 July 2023

Revised: -

SUBJECT: Center Section Former Rib Cracks

I. PLANNING

A. Effectivity

This Service Bulletin applies to Great Lakes 2T-1A-2 Aircraft, S/N 1200 and onward with the 30116-100 configuration of the upper wing center section.

B. Concurrent Requirements

None

C. Reason

Field reports have identified the formation of cracks in the former ribs (in the leading and trailing edges) of the center section assembly. These cracks have been reported on aircraft subjected to energetic maneuvering flight. There has been no observed effect on flight.

D. Description

This service bulletin covers the inspection of the former ribs and, if required, the replacement of any cracked ribs. Inspections may be performed with the center section installed.

If cracks are identified, the center section is uninstalled, and covering is removed. Replacement former ribs are installed. Along with new ribs, new fabric retainers, saddles and brackets are installed to reduce loading on the former ribs. These actions upgrade the center section to the 30116-104 configuration.

E. Compliance

Performance of this service bulletin is required. Inspection portions must be carried out every 100 flight hours or at each annual, whichever occurs first. If the center section is modified to the 30116-104 configuration per this service bulletin no further actions are required.

No aerobatic maneuvers are permitted until the center section is modified to the 30116-104 configuration per this service bulletin. Additionally, the front and rear cockpits shall be placarded on the instrument panel "NO AEROBATIC MANEUVERS ALLOWED" in full view of the pilot and passenger. An additional "NO AEROBATIC MANEUVERS ALLOWED" placard shall be placed adjacent to the operating limitations placard in the rear cockpit.

F. Approval

The alteration specified for the affected aircraft in this service bulletin has been shown to comply with the applicable Code of Federal Regulations (CFR). The design data which supports, and are applicable to, this service bulletin are approved by the FAA Aircraft

Certification Service on 31 May 2023 as a design revision to the approved type design data for the Great Lakes 2T-1A-2 airplanes.

G. Labor Requirements

This service bulletin can be accomplished in approximately 190 manhours:

- Inspection labor: 4 manhours
- Rework labor: 186 manhours

H. Weight and Balance Changes

This installation of the brackets, saddles, and new retainers adds 1.01 lb with an arm of 11.95”.

I. Electrical Load Data

Not affected.

J. References

WCGL13AMM1 – WACO Aircraft Great Lakes Aircraft Maintenance Manual

FAA Advisory Circular AC43-13.1B

Ceconite Procedure Manual 101 from Consolidated Aircraft Coatings. (STC SA4503NM)

WACO Aircraft Corporation Drawing 30116-104.

K. Publications Affected

None.

L. Interchangability and Intermixability of Parts

The 30116-104 center section replaces the 30116-100 center section.

II. MATERIAL INFORMATION AND TOOLING

A. Material – Price and Availability

The parts listed in Section II.B of this service bulletin, drawings, labor, and materials to complete this service bulletin will be provided by WACO Aircraft Corporation at no charge for those owner/operators scheduling upgrades within 24 months of the issue of this bulletin. Owner/operators should contact WACO Aircraft Corporation to request information for implementation of this service bulletin. For aircraft that are under manufacturer warranty on the date of issue of this service bulletin, contact WACO Aircraft Corporation for warranty coverage information.

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B. Parts Necessary

Part Number	Description	Quantity
30115-1	Saddle	8
30116-150	Bracket – Center Section	1
30116-151	Bracket – Center Section	1
30116-152	Bracket – Center Section	1
30116-153	Bracket – Center Section	1
30116-106	Fabric Support	4
61157-2	Nose Rib	AR for Replacement
60447	Rib – Center Trailing Edge	AR for Replacement
60448	Rib – Center Trailing Edge	AR for Replacement
AN515C632R20	Screw	8
AN365-632	Nut	8
CR3213-4-2	Cherry-Max Rivet, Universal Head	24 + AR for rib replacement
CR3213-4-3	Cherry-Max Rivet, Universal Head	8 + AR for LE replacement
CR3212-4-2	Cherry-Max Rivet, Flush Head	8

Note 1: Standard hardware may be obtained by the owner/operator.

Note 2: It is acceptable to use equivalent MS hardware for all AN hardware.

Note 3: Due to variations in construction materials, it is acceptable to substitute equivalent hardware of different lengths as required by the installation.

Note 4: Existing hardware may be retained if it is suitable for continued use.

C. Tooling – Price and Availability

No special tooling is required. Inspection of the ribs can be accomplished using a borescope. Guide tubes may be helpful depending on the type of borescope used and the stiffness of the flexible tube. Guide tubes may be fabricated on site from suitable tubing material.

III. ACCOMPLISHMENT INSTRUCTIONS

A. General Information

Prior to performing any work on the aircraft, ensure that all systems are in a safe state and electrical power is off. Refer to the 2T-1A-2 Maintenance Manual as needed.

B. Inspection

1. To inspect the leading edge ribs:
 - a. Remove the cover plates around the forward cabane strut attachment points in the center section by removing the #4 PK screws securing the covers. Retain all hardware and the covers.
 - b. Route the borescope through the opening on the forward side of the forward center section spar.

- c. Inspect the upper flange of each of the five (5) leading edge former ribs for cracks. Cracks are most likely to form in the radius of the top flange at the aft end of the rib, over the spar. Refer to the following figure:

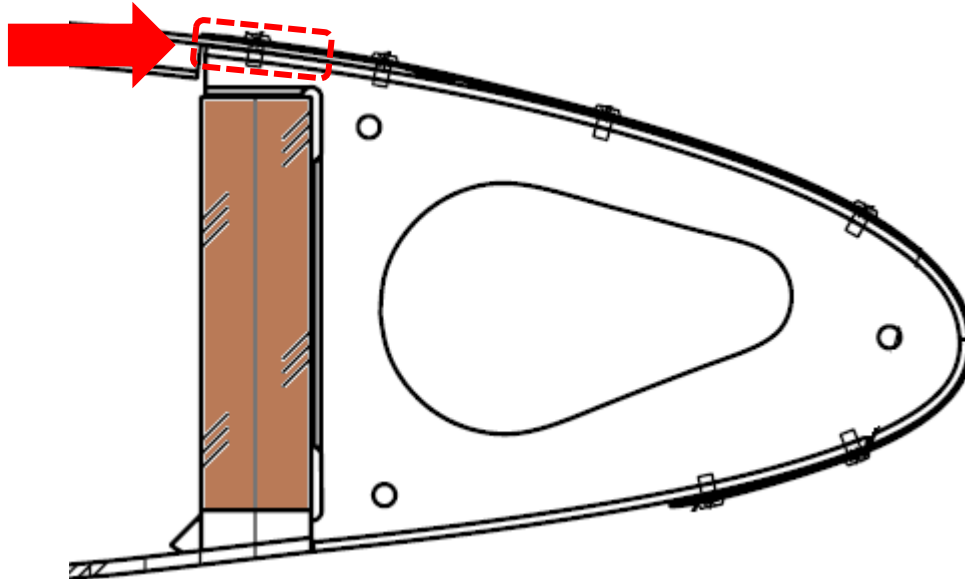


Figure 1 - Nose Rib Former Inspection Location

- d. Record locations of all identified cracks and share information with WACO Aircraft at the contact information listed in Section II - A
2. To inspect the trailing edge ribs:
 - a. Gain access to the trailing edge ribs for the borescope inspection. There are two alternatives for routing the borescope to inspect the trailing edge ribs. Access can be gained through either the inspection covers on the outboard corners of the center section trailing edge or the drain holes along the trailing edge. The size of the borescope fiberscope will be limited to about 1/4" diameter if using the drain holes. Care must be taken not to damage the drain holes if they are being used for borescope access.

Note: It is permissible to add inspection covers to the bottom surface of the center section trailing edge. Inspection covers are standard size (3-9/16" ID) and may be sourced independently or from WACO Aircraft.
 - b. Route the borescope to the upper surface of the center section rear spar at the rib attachment location.
 - c. Inspect the upper stress relief radius of each of the four (4) trailing edge former ribs for cracks. Cracks are most likely to originate from the stress relief radius at the top side of the spar clearance hole. They have also been observed in the radius of the top flange at the aft end of the rib, over the spar. Refer to the following figure:

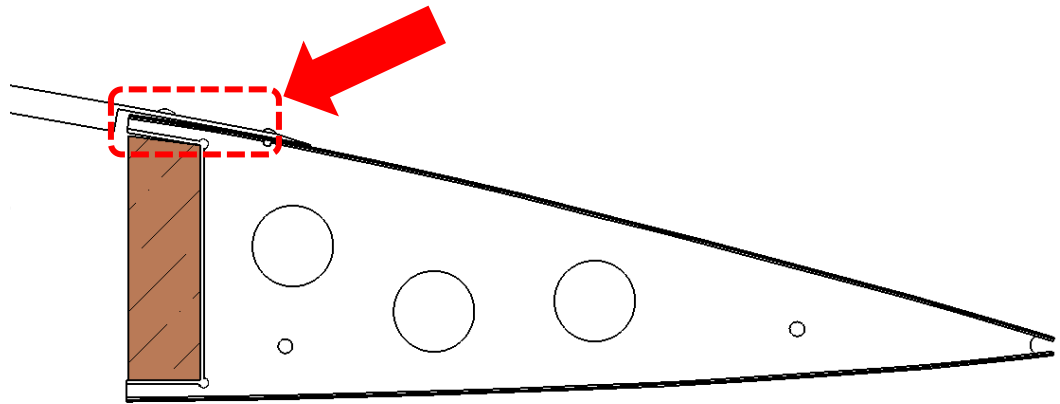


Figure 2 - Trailing Edge Rib Former Inspection Location

- d. Record locations of all identified cracks and share information with WACO Aircraft at the contact information listed in Section II - A
3. If a borescope is not available the center section may be uncovered and the ribs directly inspected per Section IIIB 1.c and 2.c.

C. Replacement

NOTE: If cracked ribs are identified they must be replaced. During replacement, the center section is changed from the 30116-100 configuration to the 30116-104 configuration. All four (4) existing fabric supports are replaced with 30116-106 fabric supports.

1. Remove the wings and center section of the aircraft. Refer to the Great Lakes 2T-1A-2 maintenance manual for information on this procedure.
2. Remove any damaged ribs identified in Section III-B Inspection portion of this service bulletin. Rivets are removed per standard practices. Remove as few rivets as possible from the leading edge skin to gain necessary access. Retain AN525-x screws which pass through the spars.
3. Remove the AN545 brass screws securing the top flanges of the five (5) leading edge and four (4) trailing edge ribs to the top surfaces of the forward and aft spars. Clean debris from empty screw holes and fill with aircraft grade epoxy. Clean up excess epoxy.
4. Replace damaged ribs, four (4) fabric supports, install new brackets and saddles. The following series of steps will be repeated at each of the four locations on the center section identified in the following figure. Refer to drawing 30116-104 for installation location of each 30116-15x bracket.

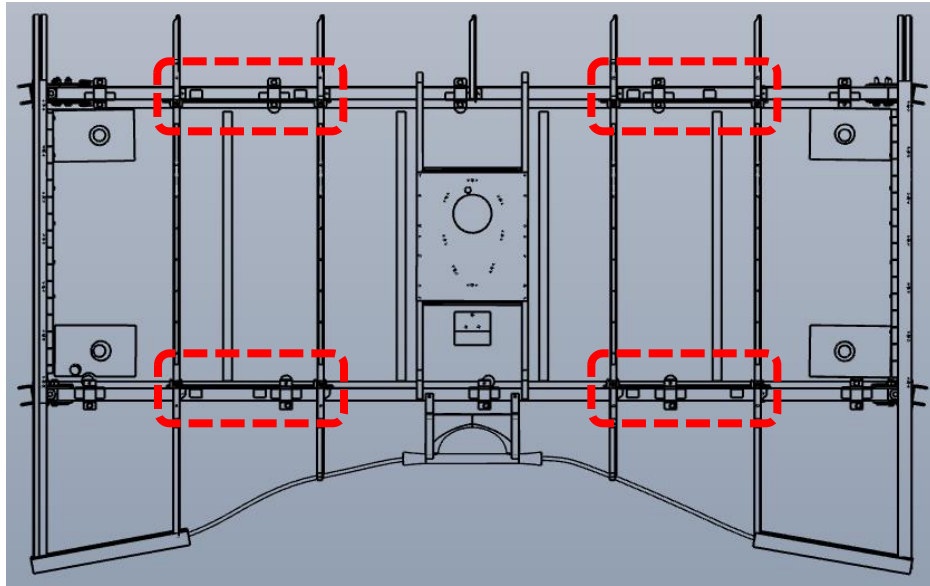


Figure 3 - Bracket Installation Locations

- a. Disconnect the fuel tank straps at bracket installation location for access. Retain the hardware.
- b. Remove the two (2) AN515 screws and associated nuts from the two ribs at the installation location.
- c. Insert bracket at installation location and position so that flanges are aligned with both ribs. Saddles and fabric retainers can be used to aid in aligning brackets.

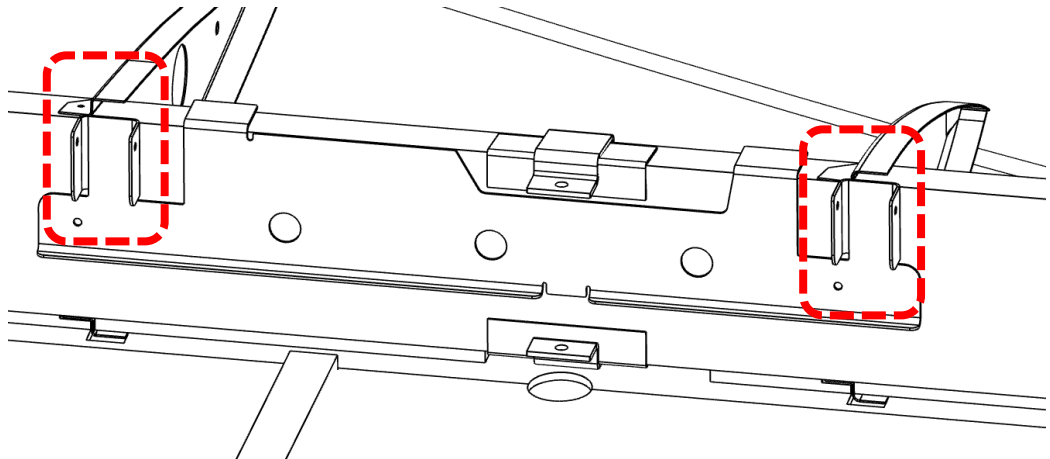


Figure 4 - Alignment of Flanges (View of Bracket 30116-150)

- d. Drill plate in two (2) places to match the holes in the spar for the AN515C632 screws (Note: diameter of hole is .1405 or #28 drill).
- e. Secure the plate in place using two (2) AN515C632R20 screws and AN365-632 nuts with the nuts on the fuel tank-side of the spar.

- f. Set the 30116-106 fabric support in place on the top of the ribs and between the flanges on the plate. Observe clearance requirements on drawing 30116-104.
- g. Drill rivet holes per drawing 30116-104 and rivet fabric support to the rib using two (2) CR3213-4-2 rivets. (Note: the leading edge ribs may be secured to the fabric retainer using clecos until the leading edge skin is positioned and installed).
- h. Locate and fit the 30115-1 saddle on the fabric support with the tapered edge facing toward the fuel tank. The following figure shows a saddle positioned along the rear spar. When positioning the saddle, it should come in to light contact with the fabric retainer such that the fabric retainer is not deformed.

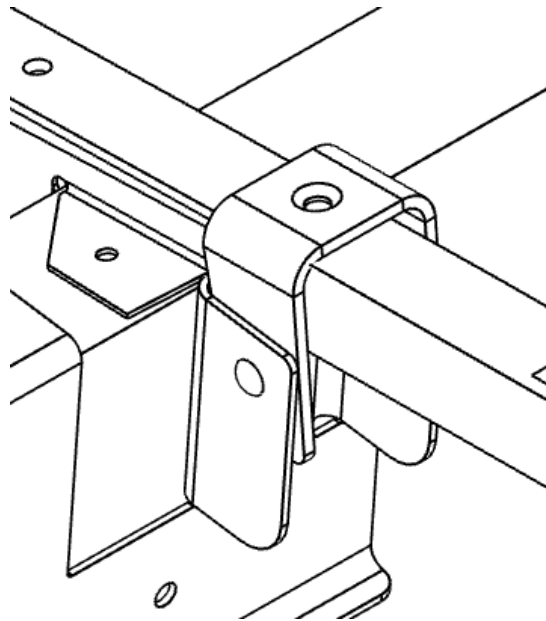


Figure 5 - Positioning 30115-1 Saddle

- i. Drill the saddle and fabric retainer for CR3212-4-2 rivets (Note: saddle is also drilled with countersink) and rivet. Refer to drawing 30116-104 for clearance information.
- j. Repeat steps 4c through 4i at the remaining three locations to complete the installation of the remaining new brackets.
- k. At each of the eight (8) 30115-1 saddles, match drill through the holes provided in the bracket flanges into the saddle using a #30 drill.
- l. Rivet eight (8) saddles to bracket flanges using two (2) CR3213-4-02 rivets at each saddle location.
- m. Leading edge ribs (P/N: 61157-2) are secured to the leading edge skin using MBC4801-0405 rivets and CR3213-4-3 rivets through the fabric retainer and leading edge. The leading edge is installed on the outer surface of the fabric

retainers. Use existing holes in the leading edge skin to locate rivets into the replacement ribs.

- n. Trailing edge ribs (for inboard, P/N: 60447; for outboard P/N: 60448) are secured to the trailing edge assembly using AD32BS pop rivets and MS20470A3 rivets. Refer to the following figure for rivet locations at the outboard rib:

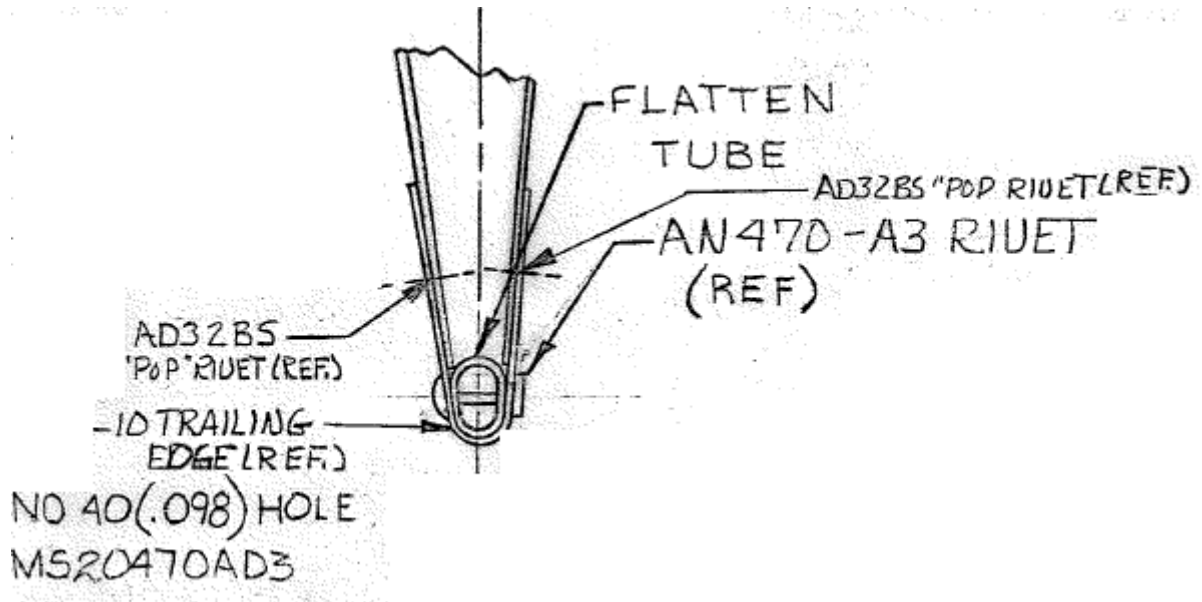


Figure 6 - Outboard Trailing Edge Rib Detail

Refer to the following figure for rivet locations at the inboard rib

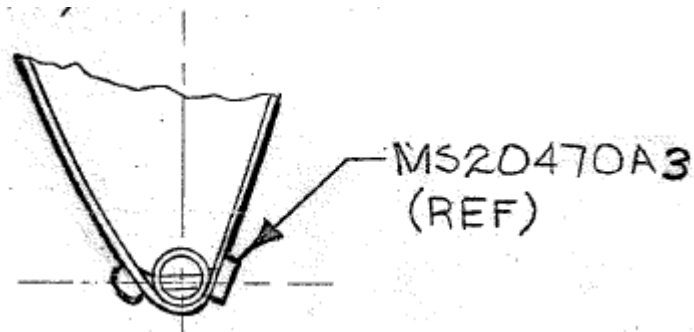


Figure 7 - Inboard Trailing Edge Rib Detail

5. Recover and repaint center section. Use existing holes where possible for fabric rivets. Ensure adequate edge distance between existing rivets and fabric rivets is maintained.
6. Install upper and lower wings and rig. Refer to the Great Lakes 2T-1A-2 maintenance manual for information on this procedure.
7. Reconnect ailerons, any applicable wiring, pitot-static lines, and fuel lines. Refer to the Great Lakes 2T-1A-2 maintenance manual for additional information.

D. Post Installation Checks

1. Referring to section 3 of the Great Lakes 2T-1A-2 maintenance manual, ensure the center section and wings have been rigged correctly. Check disturbed flight controls (ailerons) for full and free movement.
2. Check all fuel connections to the center section for security and perform leak check.
3. Check all pitot-static connections to the wings for security and perform leak check.

E. Recording

Upon completion of this service bulletin, make a logbook entry: "Service Bulletin GL-SB0002 accomplished - center section 30116-104 installed." or equivalent.